

Bachelor ' s Thesis (Academic Year 2020)

# Traffic Generation for Quantum Internet Simulator

Keio University, Faculty of Environment and Information Studies

Nozomi Tanetani

量子インターネットのためのトラフィック生成モデル

概要をここに書く

キーワード:

1. 量子インターネット, 2. トラフィックモデル, 3. 重力モデル, 4. トラフィック生成

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Traffic Generation for Quantum Internet Simulator
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Write an abstract here.

Keywords :

1. Quantum Internet, 2. Traffic Model, 3. Gravity Model, 4. Traffic Generation

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Nozomi Tanetani

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# 1 Introduction

## 1.1 Background

## 1.2 Research Contribution

## 1.3 Thesis Structure

本論文における以降の構成は次の通りである。

1章では，背景を述べる．2章では，本研究における問題の定義と，解決するための要件の整理を行う．4章では，本研究の提案手法を述べる．5章では，4章で述べたシステムの実装について述べる．6章では，4章で求められた課題に対しての評価を行い，考察する．7章では，本研究のまとめと今後の課題についてまとめる．



## 2 Theory of Quantum Information

### 2.1 History of Quantum Information

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## 2.2 Qubit

## 2.3 Multiple Qubit System

## 2.4 Quantum Gates

### 2.4.1 Single Qubit Gates

### 2.4.2 Controlled Gates

## 2.5 Superposition

## 2.6 Entanglement

### 2.6.1 Bell Pair

## 2.7 Quantum Teleportation

## 2.8 Quantum Network

### 2.8.1 Quantum Key Distribution

### 2.8.2 Classical Repeater Network

### 2.8.3 Quantum Repeater Network

### 2.8.4 Entanglement Swapping

### 2.8.5 Entanglement Purification

### 2.8.6 Quantum State Tomography

### 2.8.7 Quantum Internet Simulator

## 3 Theory of Classical Teletraffic

3.1 History of Teletraffic

3.2 Poisson Model

3.3 Traffic Pattern in IP Network

3.4 Self-similar Model

3.5 Traffic Matrix

3.6 Gravity Model

## 4 Problem Definition and Proposal

### 4.1 Problem Definition

### 4.2 Proposal

# 5 Implementation

## 5.1 Implementation

# 6 Evaluation

## 6.1 Evaluation

Write an evaluation here.

# 7 Conclusion

Write a conclusion here.

## 7.1 Conclusion

# Acknowledgment

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# Bibliography